No. 657,672. Patented Sept. 11, 1900.

A. PETTERNEL.

PROTECTIVE DEVICE AGAINST BURGLARY.

(Application filed Nov. 7, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2

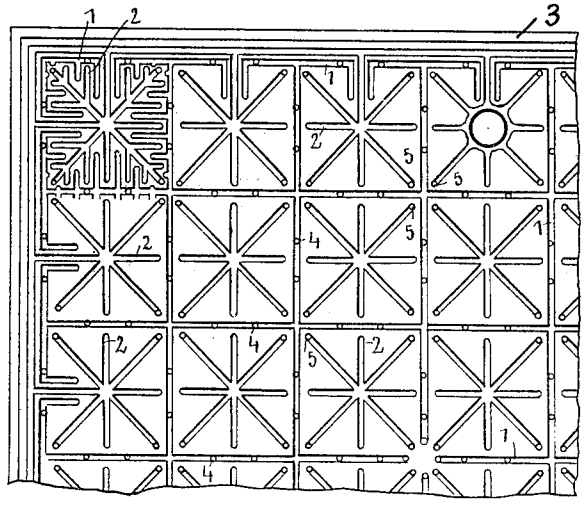


Fig. 3

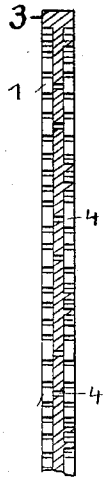


Fig. 1

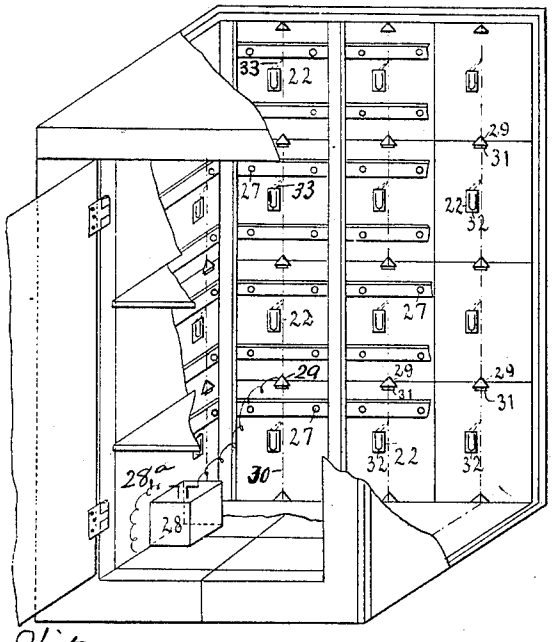
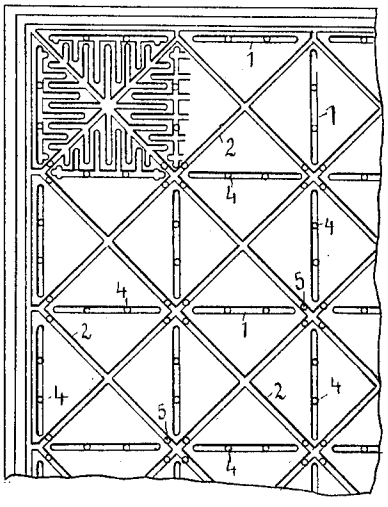


Fig. 4



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No. 657,672. Patented Sept. 11, 1900.

A. PETTERNEL.

PROTECTIVE DEVICE AGAINST BURGLARY.

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Fig. 5

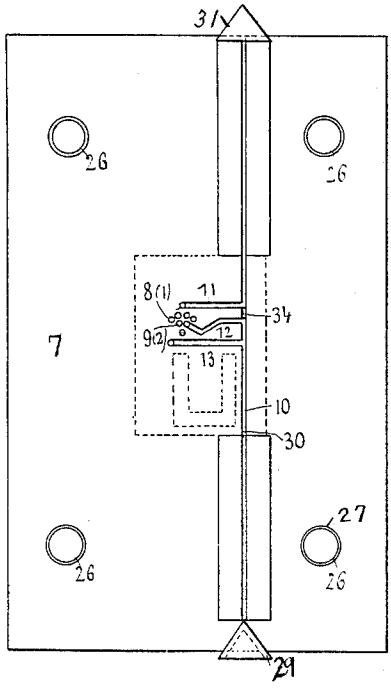


Fig. 6

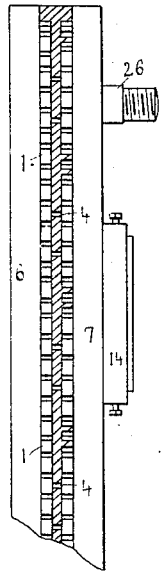


Fig. 7

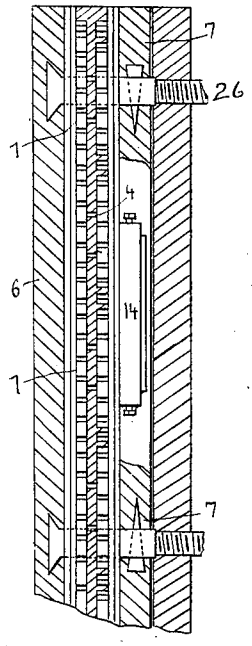


Fig. 8

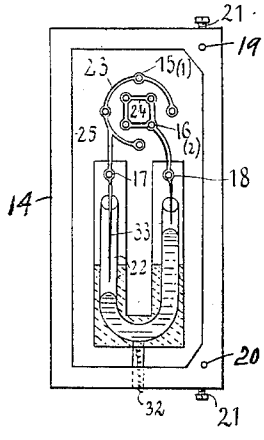


Fig. 9

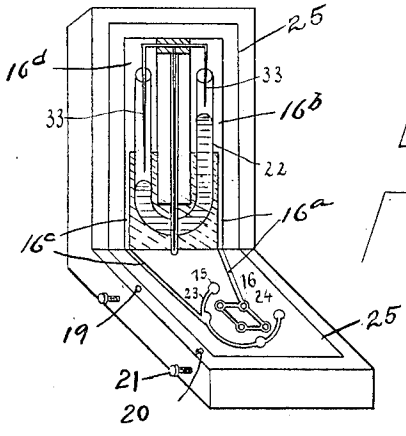
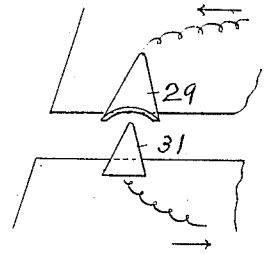


Fig. 10



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UNITED STATES PATENT OFFICE.

AUGUST PETTERNEL, OF SIEBENHIRTEN, AUSTRIA-HUNGARY.

PROTECTIVE DEVICE AGAINST BURGLARY.

SPECIFICATION forming part of Letters Patent No. 657,672, dated September 11, 1900.

Application filed November 7, 1899. Serial No. 736,174. (No model.)

To all whom it may concern:

Be it known that I, AUGUST PETTERNEL, manufacturer, of Siebenhirten, district of Mödling, Lower Austria, Austria-Hungary, have invented certain new and useful Improvements in Protective Devices Against Burglary, of which the following is a specification.

This invention relates to a device for preventing burglary, and is capable of being utilized for any kind of closed spaces, such as apartments, money-chests, and the like.

The essential feature of the invention is that the space or chamber to be protected at those places which are most liable to be broken into or opened—for instance, in the case of money-chests all around or in the case of apartments at the door or the window or along the walls—is covered with plates or frames joined to each other and provided with two separate grooved sets or frames containing air of different densities, both said plates or frames being mounted and each carrying inside a U-shaped mercury-tube, so that whenever the grooves or the rarefied or compressed air contained therein are in any way acted upon the closing of an electric circuit in which a burglar-alarm is inserted is effected, thus giving a warning signal. By the use of grooved plates it is possible to render a space or chamber perfectly secure, considering that the distance and the width of the grooves need not exceed one millimeter in view of burglary-tools of less thickness being out of question, and therefore in a case of intended burglary a union of the two grooved sets, and consequently the closing of an electric circuit, will be effected without fail. My invention thus removes the possibility of preventing the closing of the electric circuit by plugging the hole broken into, as may be done with the devices known heretofore and also based upon the use of air of different densities.

The invention is clearly illustrated in the accompanying drawings, like figures of reference indicating like parts.

Figure 1 is a perspective view of a safe rendered burglar-proof by the application of my invention. Figs. 2, 3, and 4 show one of the grooved plates in front view and cross-section and back view, respectively. Fig. 5 is a rear view, and Figs. 6 and 7 are edge views, partly in cross-section, of grooved plates with cover-plates; and Figs. 8 to 10 are detail views.

From Figs. 2, 3, and 4 it may be seen how the grooves are provided upon both sides of the frames and form two entirely-independent sets 1 2. The grooves are about one millimeter in width. The distance between the individual grooves is likewise one millimeter, and the frame or solid portions projecting between the grooves are in the same plane as or flush with the smooth frame edge 3. The grooves 1 of the front surface are connected to each other and communicate by cross-channels 4 of the frame with the grooves 1 of the rear surface. In like manner also the grooves 2 are connected with each other and communicate by cross-channels 5 with the grooves 2 of the rear surface. Both sides of the grooved frames are provided with cover-plates 6 7, Figs. 5, 6, and 7, held together by screws, one side of these cover-plates being provided with thin varnish coatings, this varnished side being cemented onto the grooved frame, so that a perfect hermetical joint between two non-communicating systems of channels is obtained. The varnish coating between the grooved frames and the cover-plates may, however, be substituted by other suitable tightening means—as by simply inserting, for instance, india-rubber pieces, which, if not adhesive in themselves, are fixed to the plates by means of screws. It is also practicable to provide a number of grooved frames and their appertaining inner cover-plates with one common outer cover-plate. In all cases the outer cover-plate 6—that is to say, the one most directly exposed to being forced or broken—is not provided with any opening, whereas each inner cover-plate 7 is provided with eight holes through it, of which the four outer ones 8 communicate with the set of grooves 1 and the four inner ones 9 with the set of grooves 2. Moreover, each inner cover-plate is traversed by a main groove 10, divided into two parts by an inserted packing 34. From this groove three grooves 11, 12, and 13 are branched, the first one of which 11 communicates with one of the holes 8 and the second one 12 with one of the holes 9 and with the set of grooves 1 or 2, respectively, while the third groove 13 has no direct communi-

cation with the grooved frame. The object of these grooves will be described farther on. Upon each inner cover-plate a plate 14 is fixed, by which the grooves arranged in the cover-plate are formed into closed channels or conduits. The plate itself is provided with twelve grooves. The four outer ones 15 are located above the holes 8, the four inner ones 16 above the holes 9, the two holes 17 and 18 above the groove 13, and the two outer holes 19 and 20 above the main groove 10 of the cover-plate. The two grooves 19 and 20 are each closed or opened by a small set-screw 21, acting as a valve, which allows the passage of air out of or into the conduits of the grooved plate or out of or into the arm of the U-shaped mercury-tube 22. The U-shaped mercury-tube 22, which consists of two short glass tubes containing mercury and having their lower ends connected by a metal tube, is located in a corresponding recess of the supporting-plate, which latter is, moreover, furnished with grooves 23 and 24, the former of which connect the holes 15 and 17 and the latter the grooves 16 and 18 with one another. Upon the plate is also a glass plate 25, by which two systems of conduits are formed, one of which connects the grooves 1 with the one arm of the U-shaped mercury-tube and the other the grooves 2 with the other arm of the U-shaped mercury-tube. Now in both systems of conduits, as has already been mentioned, air-pressures are produced different relatively to each other and to the outer air by either pumping air into or out through the valves 21, so that the mercury stands at unequal levels in the arms of the U-shaped mercury-tube.

In the case when the device is applied to ceilings and walls the U-shaped tubes are normally suspended; but where they are applied to floorings they are arranged standing, and for the latter purpose they are constructed as shown in Fig. 9. In this form grooves 16 are connected by a groove 16^a to the closed tube or chamber 16^b, with which one leg of the U-shaped mercury-tube, the upper end of which is open, communicates. Grooves 15 are likewise connected to tube or chamber 16^d, with which the other leg of the mercury-tube communicates by a groove 16^c. In the form of device shown in Fig. 9 glass plates 25 are placed on both the vertical and the horizontal parts of the frame for closing the grooves, &c., as above described. The space to be protected is fitted with the above-described grooved frames furnished with cover-plates, supporting-plates, and U-shaped mercury-tube, the construction of the frames and plates being adapted to the special requirements of each case. In case of safes or chests, for instance, the inner cover-plates are provided with a number of screw-threaded pins 26, Figs. 5, 6, and 7, passed through corresponding openings 27 of the iron frame used in substitution for the ordinary safe or chest walls and tightened by means of nuts. The same method may be adopted for making the walls of apartments burglar-proof.

In cases where the cover-plates are made of cement or a similar material the fastening-pins 26 are preferably passed through the grooved frame until one-half of the outer cover-plate is reached, Fig. 7.

In all cases the frames and plates arranged beside and above one another present outwardly a perfectly-smooth surface, offering no point of application whatever for burglars' tools, and upon damaging such plates and frames to any appreciable extent either a communication is established between the grooves 1 and 2 or between one of them and the outer air, the effect being that in the former case the mercury-levels in the U-shaped mercury-tube are equalized, while in the latter case, owing to the entering of outer air into or owing to the escaping of compressed air out of one of the systems of conduits, the levels are displaced relatively to each other, thus closing in either case by means of respective conductors a circuit by which any suitable alarm apparatus may be actuated. The conducting connection between the source of electricity and the frames and plates is made as follows: One pole of battery 28, Fig. 1, is connected by wire 28^a to one of the plates, and the other pole is connected to an insulated metal pyramid 29 of one of the plates or frames, open at the bottom, Figs. 1, 5, and 10, and adapted to receive a projection or knob 31, (of the next plate,) which is connected with an insulated wire in the main groove 10 of cover-plate 7. The parts 29 31 and the wires 30 of all plates thus are electrically connected with the one pole of the battery, while their other pole, as already mentioned, is directly connected with the plates and frames. With the latter the metal tube of each U-shaped mercury-tube 22 is also connected by a wire 32, Figs. 1 and 8, while into both arms of the U-shaped mercury-tube wires 33 extend so as to be equidistant from each mercury-level. These are passed through the holes 17 and 18, connected with the groove 13, and electrically connected with the wire 30. The open parts of the groove 10, divided by the packing 34, are finally hermetically closed by means of glass plates. Now as soon as (either by boring the cover-plates or in any other manner) a connection is established between the two systems of grooves 1 2 or the outer air enters one of the latter or an escape of compressed air takes place the mercury of the U-shaped mercury-tube 22 will close the circuit, so that if an alarm apparatus is connected thereto the signal given by the latter will draw attention to the intended burglary.

What I claim, and desire to secure by Letters Patent, is—

1. In a protective device against burglary, the combination of an electric alarm-circuit, plates or frames for covering the space to be protected and provided with two separate and independent sets of grooves 1, 2, the air con-

tained in one set differing in density from that contained in the other set and also from the outer air, a U-shaped mercury-tube 22, terminals of the alarm-circuit extending into the arms of the U-shaped mercury-tube, each set of grooves communicating with an arm of the U-shaped mercury-tube, the mercury-level of which when the grooves are broken into will change and close the alarm-circuit and actuate the alarm substantially as and for the purpose described.

2. In a protective device against burglary the combination of plates covering the part to be protected, adjacent but non-communicating sets of grooves 1, 2, in said plates, a hermetically-sealed cover-plate for said grooves, a U-shaped mercury-tube 22, the grooves 1 communicating with one leg of the U-shaped mercury-tube, the grooves 2 communicating with the other leg, wires 33 extending into the legs but not to the mercury and connected to one side of an alarm-circuit, wire 32 connected to the mercury in the U-shaped mercury-tube and to the other side of the alarm-circuit, whereby changing the relative pressure in grooves 1, 2, will close the alarm-circuit

3. In a protective device against burglary the combination of plates covering the part to be protected, adjacent but non-communicating sets of grooves 1, 2, in said plates on both sides thereof, the grooves on one side of the grooved plate being connected to similar grooves on the other side of the plate, hermetically-sealed cover-plates on the sides of the grooved plate closing said grooves, a U-shaped mercury-tube 22, the grooves 1 communicating with one leg of the U-shaped mercury-tube, the grooves 2 communicating with the other leg, wires 33 extending into the legs but not to the mercury and connected to one side of an alarm-circuit, wire 32 connected to the mercury in the U-shaped mercury-tube and to the other side of the alarm-circuit, whereby changing the relative pressure in grooves 1, 2, on either side of the grooved plate will close the alarm-circuit.

In witness whereof I have hereunto signed my name, this 24th day of October, 1899, in the presence of two subscribing witnesses.

AUGUST PETTERNEL.

Witnesses:
JOHN LUX,
ALVESTO S. HOGUE.